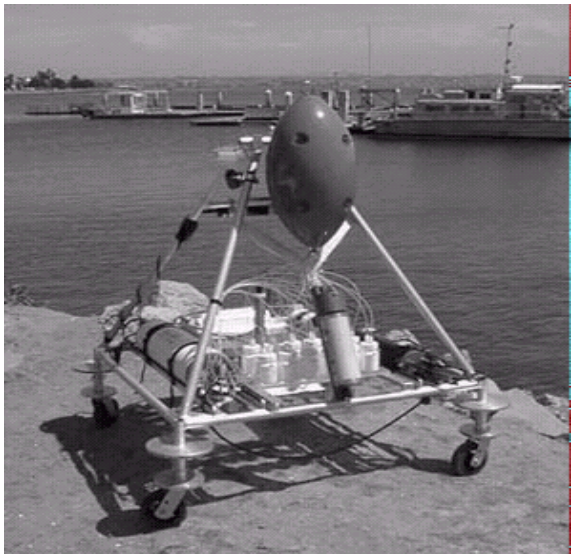
FACT SHEET
Benthic Flux Sampling Device

Department of the Navy RAB/TRC Training Workshop

What is a Benthic Flux Sampling Device?



The benthic flux sampling device (BFSD) is a prototype monitoring and assessment tool that measures changes in the quantity of contaminants released from sediments in the harbors and coastal regions. The BFSD can assist in the remediation process. The BFSD is a tripod – shaped instrument that is deployed from a ship, and uses numerous sensors and sampling tools to gather sediment data from the ocean floor over a couple of days. The BFSD is then retrieved and the samples are analyzed to determine if the contamination concentrations are increasing or decreasing. If the concentrations are increasing this means that the contaminants are flowing out of the sediments and into the water. Decreasing concentrations indicate that the contaminant is flowing into the sediment. The BFSD can aid in determining the extent of the contamination in a relatively short period of time.

What does the BFSD do?

The BFSD was designed to characterize metal contamination problems in bays, harbors and coastal waters resulting from a variety of sources, including ships, shoreside facilities, municipal outfalls, spills and non-point source runoff. The technology provides a means to assess contaminant mobility by directly measuring and quantifying the contaminant flux across the sediment-water interface.

What are the advantages of using the BFSD?

- Deploy from a small surface craft using light duty handling equipment.
- Operate alone in the marine environment at depths to 50 meters and currents to 2 knots.
- Provide remote, real-time video imaging of the bottom site prior to operations.
- Supply programmable, microprocessor-controlled independent operation for up to 4 days.

- Secure placement (bottom landing) with minimal disturbance of bottom sediments.
- Measure and store sample chamber depth, dissolved oxygen, pH, conductivity, and temperature data.

Where has the Navy implemented the BFSD?

BFSD was used to characterize metal contaminants in sediments at the Naval Station San Diego (Paleta Creek site) and Alameda Naval Air Station (Seaplane Lagoon site) in California, as well as the Pearl Harbor Naval Complex (Bishop Point and Middle Loch sites) in Hawaii. Results showed that BFSD provided a reliable means for evaluating the mobility, source loading to water column, and potential bioavailability of in-place sediment contamination.

Glossary

Benthic - The bottom of a sea or a lake

Bioavailability - The degree to which a chemical is present or available at the site where it was released

References:
- Navy, 2000.*DON Environmental Restoration SMART Cleanup for Future Generations.*
- Thomas W. Nov.2000.Hampton, Mobility Space and Naval Warfare Systems Center, San Diego. *Flux Measurement Used to Characterize Sediment Contamination.*

For further information visit:
http://www.clu-in.org,www.rtdf.org
http://www.denix.osd.mil
http://www.calepa.ca.gov/CalCert/CertifiedTech/BenthFlu.htm